AMERICAN AND EUROPEAN HIGH-SPEED TRAINS.

I.

MUCH has been written on the relative cost of travel on American and European railways, but, strange to say, very little has been published, of a definite nature, on the service rendered by the railways in return for the fares collected. The frequency, the punctuality, and the expedition of the service have received but scant attention.

The dearth of information on these points is not difficult of explanation. The work involved in the compilation of sufficient and accurate data, adequately to show the character of the service rendered, is so extensive and exacting as to discourage all but those ready to devote a great amount of time and patience to the collection of the facts as well as to their preparation for presentation.[1]

Twenty years ago E. Foxwell[2] made an extended investigation into the speed of British express trains, and in the following year H. B. Willock[3] computed the speed of the express trains of Great Britain in 1871 and compared the results he obtained with those secured by Mr. Foxwell, thus showing the progress that had been made during the interval from 1871 to 1883.

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[1] To the person whose acquaintance with railway time-tables is confined to the condensed schedules of through trains this statement may not appeal with much force. But let such a person compute the journey and running speeds of the trains between two cities no more remote from each other than New York and Boston, where most of the trains run over the lines of but a single company, and his conception of the pains and labor involved in getting from the local time-tables an accurate statement of the distances traveled by different trains and the number of station stops, and the time thus lost, by the trains between a sufficient number of cities to show the character of the service of a country, will undergo a sweeping modification.

[2] For the results of MR. FOXWELL's labors see " English Express Trains: Their Average Speed, etc.; with Notes on Gradients, Long Runs, etc.," *Journal of the Royal Statistical Society,* Vol. XLVI, pp. 517 ff.

[3] H. B. WILLOCK, " English Express Trains in 1871; and a Comparison between Them and Those of 1883," *ibid.,* Vol. XLVII, pp. 259 ff.

Since the early eighties until recently nothing of extended scope on train speeds has been published. In 1901 Mr. W. A. Schulze[4] presented tables which purported to show the speed of the express trains of America and of the principal countries of Europe. His work was, however, performed with such strong pro-German bias that the results he obtained have but slight value.[5] On comparing the movement of the trains of the different countries he arrived at the astonishing conclusion that the trains of Germany average better in point of speed than those of any other country.

II.

The present paper undertakes three somewhat independent things: the speed of the most famous railway trains of the world will be shown; the train service between the principal cities of the United States will be contrasted with the train service between the principal cities of the German Empire; and finally a reply will be made to Mr. Schulze's last discussion of European and American high-speed trains.

Unusual interest attaches to the speed of the world's famous trains because these trains are looked upon as showing the standard of excellence prevailing in the country through which they run. This generally accepted view rests on a secure foundation, but of course it must not be understood that in every instance the famous trains are the fastest trains regardless of all circumstances. There are certain considerations which must always be kept in mind in discussing the speed of trains and chief among these is the matter of distance.

Distance affects speed in at least two ways. Travel between remote points is not so heavy as between near-by points of equal importance, and therefore there is not the same demand or reward for high speed. Long stretches of track devoid of sharp

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[4] "Die Fahrgeschwindigkeit der Schnellzüge auf den Haupteisenbahnen in Europa," *Archiv für Eisenbahnwesen,* 1901, pp. 124 ff.; and "Die Fahrgeschwindigkeit der amerikanischen Eisenbahnen," *ibid.,* pp. 782 ff.

[5] A criticism by the present writer, of Mr. Schulze's tables is found in this JOURNAL, Vol X, pp. 361 ff., and a rejoinder by MR. SCHULZE in the *Archiv für Eisenbahnwesen,* 1902, pp. 1244 ff.

curves, free from mountain ranges to be climbed, wide rivers to be crossed, often ferried, and large cities which must be slowly traversed, are rare, and it is therefore generally much more difficult, from the physical point of view, to maintain a high speed over a great distance.

Because of the obstacles which usually intervene and prevent the running of trains over great distances at the highest speed, the long-distance train — even though it be the best of its kind and justly famous — may not bear comparison with a short-distance train not so well known. For this reason I have introduced trains which run shorter distances, even if they are not so widely known, in order to show the service of the country under consideration with greater accuracy.

What has been said on the importance of giving due weight to the matter of distance in discussions of train speed will appear and be emphasized after the tables which will be introduced have been examined. It will be noted that as the distances increase the average speed usually diminishes, especially when the trains of any country which may be selected are contrasted with one another.

In showing the speed of the trains which, for their respective countries, indicate the accepted standard of excellence, a basis is presented, although it is but a narrow and unsatisfactory one, for judging the merits of the train service of the United States and of the German Empire, which will be shown at some length.

Before the tables are submitted, the sources of information drawn on, the significance of the terms employed, and the manner in which the speeds were computed may be given.

The sources of information were as follows: *Official Guide of the Railways and Steam Navigation Lines of the United States,* May, 1903; *Reichs-Kursbuch,* May, 1903; *Guide officiel des voyageurs sur tous les chemins de fer français,* May, 1903; Bradshaw's *General Railway and Steam Navigation Guide for Great Britain and Ireland,* February, 1903; *Orario ufficiale delle strade ferrate del Regno d'Italia,* February, 1903; for Spain the *Guia general de ferrocarriles,* January, 1903; and *Conducteur—*

*Fahrpläne der österreichischen und ungarischen Eisenbahn-, Post-
und Dampfschiff-Course,* February, 1903.[6]

By "journey-time" is meant the total time elapsing from the
moment of departure of the train from the initial station to
the moment it comes to a stop at its final destination. By "run-
ning-time" is meant the journey-time minus the time lost in
station stops. "Journey-speed" denotes the average number
of miles per hour, stoppages included, by which a train advances
on its journey. By "running-speed" is meant the average num-
ber of miles per hour run by the train while it is actually in
motion from station to station, *i.· e.,* the average speed obtained
by deducting station stops.

To get the aggregate time lost in station stops, in all cases
where the schedule gave merely the time of arrival at an inter-
mediate station, or merely the time of departure, one minute
was allowed for the stop, and one minute was also allowed where
the schedule gave the same time for arrival and departure.[7]

In ranking trains, although it has not been customary so to
regard it, journey-speed should be deemed of greater importance
than running-speed. This is true because the reaching of his
final destination is the consummation the traveler most desires
and constantly has in view. Rapid running between stations
associated with lounging at stations does not bring him any faster
to the goal he desires than more moderate but more continuous
running does, while it considerably increases the dangers of his
journey.

In the table on pp. 40, 41, the speed of the world's most
famous trains is given. Originally the plan was to show the aver-
age journey- and running-speed of these trains for their entire

[6] A comparison of the full schedules of the guides for February of Great
Britain, Austria-Hungary, and Italy, and for January of Spain, with the abridged
tables for these countries found in the *Reichs-Kursbuch* for May, showed no
changes in the schedules of the trains which will find a place in the tables of this
article, and it was therefore assumed that the schedules of January and February,
1903, were in force in May, 1903.

[7] For the trains of this country this, of course, seldom gives the actual
running time, because many of the schedules in the *Official Guide* are more or less
abridged, and because of the numerous grade crossings which still exist and
frequently necessitate a full stop.

journey, and this only.   But later it was thought best to depart somewhat from this scheme and thereby prevent misconceptions which would later have to be corrected.   Where trains pass through more than one country their speed is shown by countries. This was done in order that the good service of one country may not suffer because of the poor service of its neighbors.

It will be noted that the journey of a number of the trains, particularly those of Great Britain, have been cut short, and that the speed of the French trains is given for their full journeys and for parts of them as well.   This was done to show the speed of the French trains over the stretches of track where the fastest running is done and to permit comparisons with the other trains of the table on equal terms.   The speed of the trains between Philadelphia (Camden) and Atlantic City is given for May, 1903, and October, 1903, but naturally, when comparisons are made, the speed in May should be used.   The speed in October is given so that these trains may be seen at their best.   It will be noted that the speed of the "Méditerranée Express" on its run from Paris to Calais is also reported twice.   This train has an emergency schedule which is faster than its regular, but the latter is, of course, to be used for comparative purposes.[8]

In giving the names of the trains the more prosaic terms employed by the railway officials are adopted rather than the more or less fanciful expressions, such as the "Flying Scotchman," "Flying Cornishman," "Atlantic City Flyer," used by the public to designate their favorite train from London to Scotland, from London to the southwest of England, and between Philadelphia and Atlantic City.

[8] Sometimes the "Méditerranée Express" arrives from the south late, and by arrangement the boat is held at Calais up to a certain time, and the train is pressed forward from Paris on this special but fixed schedule.   The second statement, which shows the speed of this express when it runs on its regular schedule, is, of course, the one to be compared with the other trains, for it is customary for trains to make up time when their connections are late.   For example, the record of the Atlantic City Express of the Reading Railway during the month of August, 1898, which happens to be at hand, shows that the average running-speed of this train fell below seventy miles per hour only three times during the entire month, the train exceeding its schedule time because of the lateness of the ferry.   It is to be noted that, in addition to the emergency and regular schedules, the entire run of the "Méditerranée Express" is given.

III.

Mention was made at the beginning of this paper of Mr. Schulze's articles on the speed of European and American trains. In the second of these articles Mr. Schulze contrasted the speed of German and American trains, much to the disadvantage of the latter.

Referring to his table showing the speed of American trains he said:

A comparison of the table just discussed, showing American train speeds, with the table appearing on pp. 127 ff. of the *Archiv für Eisenbahnwesen* of 1901, giving the average speed of the express trains of Germany, will show, if the fast trains between Philadelphia and Atlantic City, which are run under special conditions, be dropped out of consideration, not only that equally high average speeds are reached in Germany, when the service is considered as a whole and in a large way *(im grossen Ganzen),* but even higher averages are attained than in America.[9]

According to my tables, an average speed in excess of sixty-five kilometers per hour is attained by only twenty-six trains in America, while this speed is reached or exceeded by thirty-six trains of Germany.[10]

After reviewing at length the article by the present writer in this JOURNAL of June, 1902, in which many serious errors of fact and method were pointed out in his articles on the speed of American and German trains, Mr. Schulze dramatically declared [11] that he was and still is of the opinion that the decisive superiority of the German train service was demonstrated by his tables.

Further discussion of Mr. Schulze's contention that, when considered in a large way, German train service appears to better advantage than American will be reserved until after tables showing the passenger train service of the two countries on an extensive scale have been presented. In the tables Mr. Schulze introduced in support of his contention that the train service of Germany is better than that of the United States he gave what he declared to be the running speed of but forty-three American trains[12] and that of but forty-six German trains.

[9] *Archiv für Eisenbahnwesen,* 1901, p. 796.   [10] *Ibid.*

[11] Die   Fahrgeschwindigkeit   der   Schnellzüge   auf   amerikanischen   und deutschen Eisenbahnen," *Archiv für Eisenbahnwesen,* 1902, p. 1257.

[12] In his tables he gave the speed of forty-three American trains, but, in

JOURNEY- AND RUNNING-S

Train	Journey
Atlantic City Express,[1] via Reading Railway............	Atlantic City to Camden..........
Atlantic City Express,[1] via Pennsylvania Railroad.......	Atlantic City to Camden..........
Atlantic City Express,[2] via Reading Railway	Camden to Atlantic City..........
Atlantic City Express,[2] via Pennsylvania Railroad.......	Camden to Atlantic City..........
Méditerranée Express,[3] via Nord Railway..............	Paris to Calais ....
Méditerranée Express, via Nord Railway..............	Paris to Calais ....
Empire State Express, via New York Central Railway....	New York to Buffalo ....
Edinburgh Express, via Great Northern Railway........	London to Edinburgh ....
Hamburg Express	Berlin to Hamburg................
Edinburgh Express, via London & North-Western Railway	London to Edinburgh ....
Plymouth Express, via Great Western Railway..........	London to Plymouth ....
Twentieth Century Limited, via N. Y. C. and L. S. Railways	New York to Chicago ....
Plymouth Express, via London & South-Western Railway	London to Plymouth ....
Méditerranée Express, via Nord and P. I. & M. Railways	Calais to Vintimille ....
Nord Express—whole journey......................	Ostend to St. Petersburg..........
In Belgium	Ostend to Herbesthal ....
In Germany	Herbesthal to Eydtkuhnen........
In Russia	Eydtkuhnen to St. Petersburg ......
Sud Express—whole journey	Paris to Madrid ....
In France—Orléans and Midi Railways.............	Paris to Hendaye................
In Spain	Hendaye to Madrid..............
Ostend-Wein-Budapest Express—whole journey	Ostend to Vienna................
In Belgium	Ostend to Herbesthal ....
In Germany	Herbesthal to Passau ....
In Austria	Passau to Vienna ....
Nord-Süd (Brenner) Express—whole journey	Berlin to Milan..................
In Germany	Berlin to Kufstein................
In Austria and Italy............................	Kufstein to Milan................
California Limited, via Santa Fé Railway	Chicago to San Francisco (Port Richi
Overland Limited, via N.-W., U. P., and S. P. Railways..	Chicago to San Francisco (Oakland).
Orient Express—whole journey......................	Paris to Constantinople............
In France.....................................	Paris to D.-Avricourt..............
In Germany	D.-Avricourt to Salzburg..........
In Austria-Hungary	Salzburg to Belgrade..............
In Servia, Bulgaria, and Turkey	Belgrade to Constantinople ....

[1] In October, 1903.   [2] In May, 1903.

EEDS OF FAMOUS TRAINS.

	STATION STOPS		JOURNEY-TIME		RUNNING-TIME		DISTANCE (Miles)	MILES PER HOUR	
	Number	Minutes	Hours	Minutes	Hours	Minutes		Journey-Speed	Running-Speed
.....	0	0	0	49	0	49	55.50	67.96	67.96
.....	0	0	0	52	0	52	58.00	66.92	66.92
.....	0	0	0	50	0	50	55.50	66.60	66.60
.....	0	0	0	54	0	54	58.00	64.44	64.44
.....	1	4	3	10	3	6	185.14	58.46	59.72
.....	1	4	3	22	3	18	185.14	55.08	56.10
.....	4	10	8	15	8	5	439.52	53.27	54.40
.....	3	16	7	45	7	29	395.00	50.96	52.78
.....	1	4	3	27	3	23	177.69	51.50	52.51
.....	3	15	8	0	7	45	400.00	50.00	51.61
.....	2	20	5	10	4	50	246.00	47.61	50.89
.,...	11	29	20	0	19	31	962.49	48.12	49.31
.....	3	13	5	6	4	53	230.75	45.24	47.25
.....	20	118	21	15	19	17	892.86	42.01	46.30
.....	34	232	45	18	41	26	1599.35	35.30	38.60
.,...	3	22	4	22	4	0	164.39	37.64	41.09
.....	10	98	22	41	21	3	879.26	38.76	41.77
....	10	83	17	46	17	23	555.69	31.27	31.96
....	46	171	26	49	23	58	903.99	33.70	38.49
....	10	43	10	39	9	56	510.08	47.89	51.34
.....	35	127	16	9	14	2	393.90	24.39	28.06
....	23	116	23	39	21	43	822.16	34.76	37.85
....	3	23	4	22	3	59	164.39	37.64	41.26
....	14	52	13	42	12	50	474.48	34.63	36.97
....	4	11	5	5	4	54	183.28	36.05	37.40
....	13	71	22	40	21	29	782.65	34.52	36.43
....	5	28	11	49	11	21	468.27	39.62	41.25
....	7	37	10	45	10	8	314.37	29.24	31.02
ond)	39	133	78	20	76	7	2569.00	32.79	33.75
....	44	162	71	37	68	55	2314.90	32.32	33.58
....	52	229	61	36	57	47	1931.99	31.36	33.43
....	6	17	5	42	5	25	255.35	44.79	47.14
....	9	31	10	44	10	13	409.80	38.17	40.05
.....	17	81	17	6	25	45	608.25	35.57	38.61
....	17	75	27	39	26	24	658.57	23.81	24.94

[3] Emergency schedule.

To obtain that broader view which Mr. Schulze declares to be favorable to the German service, both the journey-speed and running-speed[13] have been computed of all the trains in one direction between the chief ten cities of the United States, after omitting San Francisco because of its great remoteness, and between the chief ten cities of Germany.[14] These cities, if located in a line, would give nine groups of trains for each country. But as they are actually situated, they give twenty-four groups of American and twenty-five groups of German trains.

Tables compiled on this basis — to be sure, a somewhat arbitrary one — it was believed would have much greater value than tables compiled with no thought of comparison in view, as apparently Mr. Schulze's were. The temptation to split up the journeys of fast trains in many segments and calling each a distinct train, and the temptation to include only such parts of the train's journey as would show a high average speed, which proved so alluring that Mr. Schulze could not resist them while dealing with German trains, were removed.

In computing the speed of the trains, the journey from what seemed to be the principal station of the city of origin to the principal station of the city of destination was included, where a train after running over a part of its journey divided and formed two trains, only the speed of the faster, which was assumed to be the main part of the train, was computed when the two parts ran over the same track; and where two trains running over the same track combined, only the time of the faster section was computed with that of the common train. The sources of information used were the *Official Guide of the Railways and Steam Navigation Lines of the United States,* of May, 1903, and the *Reichs-Kursbuch* of May, 1903.

making his comparisons, dropped from consideration, for reasons not at all sufficient and which will be discussed later, the fast trains between Philadelphia and Atlantic City.

[13] The method of computing speed described on p. 37 was again followed.

[14] The American cities selected were, New York, Chicago, Philadelphia, St. Louis, Boston, Baltimore, Cleveland, Buffalo, Cincinnati, and Pittsburg. The German cities selected were Berlin, Hamburg, Munich, Leipsic, Breslau, Dresden, Cologne, Frankfort-on-Main, Nuremberg, and Hanover.

AMERICAN TRAINS.[1]

Group 1.

From New York city to Boston — via N. Y., N. H. & H. R. R. (Shore Line).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
34	232.2	4	12	5	0	4	48	46.44	48.38
24	232.2	4	12	5	0	4	48	46.44	48.38
36	232.2	9	21	5	58	5	37	38.92	41.34
52	232.2	9	22	6	0	5	38	38.70	41.22
44	232.2	6	19	6	0	5	41	38.70	40.85
26	232.2	12	29	6	28	5	59	36.56	38.79
2	232.2	4	24	6	27	6	3	36.00	38.38
21[2]	232.2	8	18	6	31	6	13	35.61	37.33
61[2]	227.7	9	40	6	50	6	10	33.34	36.91
4	232.2	13	32	6	55	6	23	33.57	36.37

From New York city to Boston — via N. Y., N. H. & H. and B. & A. R. Rs. (Springfield Line).

238	234.7	8	17	5	40	5	23	41.42	43.60
268	234.7	7	18	6	0	5	42	39.12	41.18
222	234.7	14	28	6	30	6	2	36.11	38.69
44	234.7	16	54	7	0	6	6	33.53	38.48
36	234.7	15	113	8	1	6	8	29.28	38.27
26	234.7	18	36	6	53	6	17	34.10	37.36
12	234.7	53	134	9	0	6	46	26.08	34.69
320	234.7	11	20	7	15	6	55	32.38	33.94
208	234.7	39	113	9	0	7	7	26.08	32.99

From New York city to Boston — via N. Y.. N. H. & H. R. R. (Hartford Line).

118	226.6	17	24	6	0	5	36	37.77	40.47
126	226.6	14	21	6	0	5	39	37.77	40.11

Group 2.

From Boston to Buffalo — via B. & A. and N. Y. C. R. Rs.

15	498.6	8	30	12	30	12	0	39.89	41.55
17	498.6	7	34	13	0	12	26	38.36	40.11
29	498.6	12	42	13	25	12	43	37.18	39.23
23	498.6	15	55	13	45	12	50	36.26	38.86
37	498.6	23	72	16	0	14	48	31.16	33.69

[1] A summary showing the average speed of all the trains of each of the groups of American trains can be found on p. 66.

[2] The time of departure of these trains for Boston varies with the arrival of the boat from Jersey City, so the trip in the opposite direction is here given.

AMERICAN TRAINS.—*Continued*.

From Boston to Buffalo — via Fitchburg and W. S. R. Rs.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
1	480.7	15	32	12	50	12	18	37.47	39.08
19	480.7	14	36	13	36	13	0	35.34	36.97
3	480.7	18	38	14	5	13	27	34.14	35.73

GROUP 3.

From New York city (Jersey City) to Philadelphia — via Pennsylvania R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
85	89.4	2	2	1	47	1	45	50.13	51.08
59	88	0	0	1	45	1	45	50.28	50.28
87	89.4	2	2	1	55	1	49	48.32	49.20
83	89.4	2	2	1	51	1	49	48.32	49.20
67	89.4	1	1	1	52	1	51	47.89	48.32
51	89.4	1	1	1	52	1	51	47.89	48.32
81	89.4	3	3	1	57	1	54	45.84	47.05
45	89.4	1	1	1	55	1	54	46.64	47.05
97	89.4	1	1	1	56	1	55	46.24	46.64
73	89.4	3	3	1	58	1	55	45.45	46.63
49	89.4	1	1	1	57	1	56	45.84	46.23
7	89.4	0	0	1	57	1	57	45.84	45.84
57	89.4	3	3	2	0	1	57	44.70	45.84
19	89.4	0	0	1	59	1	59	45.07	45.07
5	89.4	0	0	1	59	1	59	45.07	45.07
1	89.4	2	2	2	2	2	0	43.96	44.70
63	89.4	0	0	2	2	2	2	43.96	43.96
71	89.4	11	11	2	15	2	4	39.73	43.25
31	89.4	4	4	2	8	2	4	41.90	43.24
69	89.4	2	2	2	7	2	5	42.23	42.91
65	89.4	3	3	2	9	2	6	41.58	42.57
21	89.4	0	0	2	7	2	7	42.23	42.23
79	89.4	5	5	2	12	2	7	40.63	42.23
23	89.4	5	5	2	15	2	10	39.73	41.26
9	89.4	2	2	2	15	2	13	39.73	40.33
43	89.4	9	9	2	24	2	15	37.25	39.73
47	89.4	10	10	2	29	2	19	36.00	38.58
3	89.4	5	5	2	24	2	19	37.25	38.58
75	89.4	22	22	2	50	2	28	31.55	36.24
93	89.4	26	26	3	8	2	42	28.53	33.11
89	89.4	17	17	3	5	2	48	28.99	31.92
41	89.4	8	8	3	2	2	54	29.47	30.82

AMERICAN TRAINS.—*Continued.*

From New York city (Jersey City) to Philadelphia — via Royal Blue Line.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
617	90.20	3	3	1	48	1	45	50.11	51.54
603	90.20	4	4	1	49	1	45	49.65	51.54
527	93.20	2	2	1	51	1	49	50.38	51.21
507	93.20	2	2	1	51	1	49	50.38	51.21
621	90.20	3	3	1	49	1	46	49.65	51.05
613	93.20	4	4	1	54	1	50	49.05	50.84
619	90.20	3	3	1	50	1	47	49.20	50.57
509	93.20	1	1	1	52	1	51	49.84	50.38
615	90.20	10	10	2	5	1	55	43.30	47.06
607	90.20	12	12	2	8	1	56	42.27	46.65
501	93.20	2	2	2	4	2	2	45.09	45.84
605	90.20	8	8	2	8	2	0	42.27	45.10
525	93.20	5	5	2	9	2	4	43.35	45.09
517	93.20	6	6	2	11	2	5	42.75	44.74
609	90.20	10	10	2	9	1	59	41.95	44.72
601	90.20	6	6	2	9	2	3	41.95	44.00
611	90.20	13	13	2	19	2	6	38.93	42.95
505	94.50	14	15	2	28	2	13	38.26	42.57
503	93.20	4	4	2	19	2	15	40.17	41.42
547	93.20	3	3	2	21	2	18	39.66	40.52
623	90.20	21	21	2	43	2	22	33.19	38.11
515	93.20	8	15	2	56	2	41	31.81	34.78
103	90.20	43	47	3	37	2	50	24.94	31.83

GROUP 4.

From Philadelphia to Baltimore — via Pennsylvania R. R.

1	95.8	2	2	1	59	1	57	48.30	49.12
51	95.8	1	1	1	59	1	58	48.30	48.70
7	95.8	1	1	2	1	2	0	47.50	47.90
67	95.8	0	0	2	0	2	0	47.90	47.90
49	95.8	1	1	2	3	2	2	46.73	47.10
59	94.1	0	0	2	0	2	0	47.04	47.04
45	95.8	2	2	2	5	2	3	45.98	46.73
27	95.8	2	2	2	9	2	7	44.55	45.25
35	95.8	1	1	2	11	2	10	43.87	44.21
31	95.8	1	1	2	12	2	11	43.54	43.87
65	95.8	3	3	2	14	2	11	42.89	43.87
57	95.8	5	5	2	19	2	14	41.35	42.88
61	95.8	5	5	2	20	2	15	41.05	42.57
63	95.8	1	1	2	16	2	15	42.26	42.57
69	95.8	1	1	2	21	2	20	40.76	41.05
23	95.8	2	2	2	22	2	20	40.47	41.05
55	95.8	24	24	2	47	2	23	34.41	40.19
47	95.8	14	14	2	37	2	23	36.60	40.19
21	95.8	20	20	2	44	2	24	35.04	39.91
41	95.8	5	5	2	29	2	24	38.57	39.91
3	95.8	19	19	2	48	2	29	34.21	38.57
43	95.8	28	28	3	26	2	58	27.90	32.29
25	95.8	29	29	3	28	2	59	27.63	32.10

AMERICAN TRAINS.—*Continued.*

From Philadelphia to Baltimore — via Royal Blue Line.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
509	95.8	2	2	2	2	2	0	47.11	47.90
507	95.8	2	2	2	2	2	0	47.11	47.90
527	95.8	2	2	2	3	2	1	46.73	47.50
501	95.8	4	4	2	10	2	6	44.21	45.61
505	95.8	4	4	2	12	2	8	43.54	44.90
503	95.8	2	2	2	12	2	10	43.54	44.21
517	95.8	5	5	2	19	2	14	41.35	42.90
525	95.8	4	4	2	24	2	20	39.91	41.05
515	95.8	5	5	2	35	2	30	37.08	38.32
135	95.8	6	6	2	42	2	36	35.48	36.84
123	95.8	37	37	4	10	3	33	22.99	26.98

GROUP 5.

From New York city to Buffalo — via New York Central R. R.

51	439.52	4	10	8	15	8	5	53.28	54.40
25	438.57	4	12	9	0	8	48	48.73	49.83
41	439.52	7	26	10	10	9	44	43.22	45.17
3	439.52	7	26	10	25	9	59	42.18	44.04
11	439.52	6	20	10	30	10	10	41.86	43.21
19	439.52	5	19	10	30	10	11	41.85	43.17
17	439.52	10	24	11	0	10	36	39.96	41.46
29	439.52	9	25	11	25	11	0	38.49	39.96
33	439.52	5	21	11	25	11	04	38.49	39.70
59	439.52	16	62	12	30	11	28	35.16	38.32
23	439.52	8	27	12	0	11	33	36.63	38.05
73	439.52	12	65	13	05	12	0	33.60	36.63
7	439.52	35	162	14	45	12	03	29.80	36.47
37	439.52	28	65	14	29	13	24	30.35	32.80

From New York city (Hoboken) to Buffalo — via Lackawanna R. R.

3	410	12	20	9	40	9	20	42.19	43.94
15	410	22	30	10	30	10	0	39.05	41.00
5	413	34	42	11	45	11	3	35.14	37.38
9	410	17	25	11	45	11	20	34.89	36.18
7	410	20	28	12	30	12	2	32.80	34.08

From New York city (Jersey City) to Buffalo — via Lehigh Valley R. R.

9	449.8	12	30	11	18	10	48	39.81	41.65
5	445.8	13	36	11	40	11	4	38.20	40.27
3	445.8	16	33	11	50	11	17	37.68	39.52
1	445.8	39	63	12	22	11	19	36.04	39.38

AMERICAN TRAINS.—*Continued.*

From New York city (Jersey City) to Buffalo — via Erie R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
1	425	17	27	10	45	10	18	39.53	41.26
5	425	16	28	11	15	10	47	37.78	39.42
7	425	30	54	13	45	12	51	30.90	33.07

From New York city (Weehawken) to Buffalo — via West Shore R. R.

1	428.2	8	20	10	50	10	30	39.54	40.78
19	428.2	9	33	11	40	11	7	36.72	38.53
3	428.2	13	30	12	5	11	35	35.45	36.98
5	428.2	49	81	14	50	13	29	28 87	31.77

GROUP 6.

From Philadelphia to Buffalo — via Pennsylvania and Lackawanna R. Rs.

554	433.7	27	46	10	49	10	3	40.01	43.15
58	434.0	32	107	12	43	10	56	34.12	39.71
90	434.0	52	135	13	45	11	30	31.56	37.74

From Philadelphia to Buffalo — via Reading and Lehigh Valley.

311	419.1	38	63	11	28	10	25	36.53	40.22
309	415.1	25	53	11	15	10	22	36.90	40.03
327	415.1	16	49	11	15	10	26	36.90	39.80
323	415.1	31	47	11	20	10	33	36.64	39.35

From Philadelphia to Buffalo — via Pa. R. R. (Harrisburg & Olean).

7	417.3	12	39	11	10	10	31	37.36	39.67
61	417.3	16	36	11	10	10	34	37.36	39.48

GROUP 7.

From Philadelphia to Pittsburg — via Pennsylvania R. R.

5	353.7	3	11	8	40	8	29	40.80	41.69
25	353.7	2	10	8	40	8	30	40.80	41.61
7	353.7	3	18	9	10	8	52	38.58	39.88
19	353.7	5	23	9	25	9	2	37.56	39.15
21	353.7	3	13	9	20	9	7	37.89	38.79
15	353.7	20	38	10	15	9	37	34.50	36.77
9	353.7	9	22	10	25	10	3	33.95	35.19
1	353.7	22	60	11	5	10	5	31.91	34.07
13	353.7	105	171	13	25	10	34	26.36	33.47
31	353.7	114	142	13	20	10	58	26.52	32.25

GROUP 8.

From Buffalo to Pittsburg — via Lake Shore and P. & L. E. R. Rs.

19	260	24	105	8	10	6	25	31.83	42.73
11	260	13	29	7	5	6	36	36.70	39.39
37	260	38	75	8	55	7	40	29.15	33.91

AMERICAN TRAINS.—*Continued.*

From Buffalo to Pittsburg — via Pennsylvania R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
2	207.5	22	49	8	45	7	56	30.91	34.09
4	207.5	17	33	8	45	8	12	30.91	32.98

From Buffalo to Pittsburg — via Buffalo, Rochester & Pittsburg R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
3	284	15	45	9	15	8	30	30.70	33.41
7	284	14	19	9	10	8	51	30.97	32.09

GROUP 9.

From Buffalo to Cleveland — via Lake Shore R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
25	182.5	1	3	3	37	3	34	50.46	51.16
43	183.0	4	7	4	10	4	3	43.92	45.18
19	183.0	2	5	4	10	4	5	43.92	44.81
15	183.0	3	6	4	15	4	9	43.05	44.09
11	183.0	4	7	4	25	4	18	41.43	42.55
3	183.0	3	6	4	25	4	19	41.43	42.39
33	183.0	4	7	4	30	4	23	40.66	41.74
23	183.0	8	12	5	0	4	48	36.60	38.13
47	183.0	31	35	5	40	5	5	32.29	36.00
37	183.0	21	25	6	0	5	35	30.50	32.77

From Buffalo to Cleveland — via Nickel Plate R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
3	184	8	8	5	9	5	1	35.72	36.19
1	184	7	7	5	15	5	8	35.04	35.84
5	184	28	28	6	50	6	22	26.92	28.88

From Buffalo to Cleveland — via Erie R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
103	261	26	4' 54"	12	20	7	26	21.16	35.11
107	261	12	54	8	30	7	36	30.70	34.34
207	261	36	2' 30"	11	..	8	30	23.72	30.70

GROUP 10.

From Buffalo to Chicago — via Michigan Central R. R.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
17	520.2	14	31	12	55	12	24	40.26	41.95
3	535.4	20	37	13	40	13	3	39.17	40.02
23	535.4	33	52	15	35	14	43	34.36	36.37
11	520.2	29	56	15	45	14	49	33.03	35.10

AMERICAN TRAINS.—*Continued.*

From Buffalo to Chicago — via Wabash R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
3	525	16	44	14	15	13	31	36.84	38.83
1	525	24	37	14	30	13	53	36.21	37.82
9	525	26	44	15	20	14	36	34.25	35.96
5	525	28	61	17	0	15	59	30.88	32.85

From Buffalo to Chicago — via Grand Trunk R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
3	551.94	28	66	15	45	14	39	35.04	37.68
7	551.94	27	63	15	45	14	42	35.44	37.54
5	551.94	34	179	19	20	16	21	28.55	33.75

From Buffalo to Chicago — via Erie R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
103	620.0	41	315	22	0	16	45	28.18	37.01
107	620.0	45	68	18	35	17	27	33.36	35.53

GROUP 11.

From Buffalo to St. Louis — via Wabash R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
1	741	18	37	18	15	17	38	40.60	42.03
9	741	25	49	18	30	17	41	40.05	41.91
3	741	31	137	24	18	22	1	30.50	33.65

GROUP 12.

From Pittsburg to Cleveland — via Pennsylvania R. R. (Through Homewood).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
319	140	6	10	3	30	3	20	40.00	42.00
311	140	6	10	3	30	3	20	40.00	42.00

From Pittsburg to Cleveland — via Pittsburg & Lake Erie and Erie R. Rs.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
17	135	11	15	3	30	3	15	38.57	41.53
25	135	8	12	3	30	3	18	38.57	40.90
7	135	16	51	4	15	3	24	31.76	39.70
23	135	19	23	4	0	3	37	33.75	37.32
21	135	28	239	8	30	4	31	15.88	29.88

From Pittsburg to Cleveland — via Pennsylvania R. R. (Through Alliance).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
303	150	16	27	5	5	4	38	29.50	32.37
307	150	30	55	6	0	5	5	25.00	29.50
301	150	29	43	6	0	5	17	25.00	28.38

AMERICAN TRAINS.—*Continued.*

From Pittsburg to Cleveland — via Baltimore & Ohio R. R.

Train Number	Distance (Miles)	Station-Stops		Journey-Time		Running-Time		Miles per Hour	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
9¹	174	24	39	6	5	5	26	28.60	32.02
47¹	174	18	100	7	35	5	55	22.94	29.40

GROUP 13.

From Cleveland to Chicago — via Lake Shore R. R.

25	341.97	4	8	7	15	7	7	47.16	48.04
15	341.97	12	20	8	35	8	15	39.84	41.45
19	357.00	6	14	9	10	8	56	38.94	39.96
3	341.97	12	20	8	55	8	35	38.35	39.84
23	341.97	24	39	10	25	9	46	32.82	35.00
7	357.00	59	106	12	50	11	4	27.81	32.25
37	341.97	37	55	11	50	10	55	28.89	31.32

From Cleveland to Chicago — via C. A. & C. and Ft. Wayne R. Rs.

528 ...	407	24	44	12	5	11	21	33.68	35.77
502	407	29	56	12	35	11	39	32.34	34.93

From Cleveland to Chicago — via Nickle Plate R. R.

3	339	14	18	9	49	9	31	34.53	35.62
1	339	39	43	11	0	10	17	30.81	32.96
5	339	38	47	11	50	11	3	28.64	30.67

From Cleveland to Chicago — via B. & O. R. R.

46	389.7	28	47	12	20	11	33	31.59	33.74
6	389.7	34	52	12	30	11	19	31.18	33.49

GROUP 14.

From Cleveland to Cincinnati — via Big Four R. R.

19	263.1	4	11	6	5	5	54	43.24	44.59
11	263.1	9	17	6	55	6	38	38.03	39.66
33	263.1	10	23	7	15	6	52	36.28	38.31
25	263.1	19	65	9	20	8	15	28.18	31.89

From Cleveland to Cincinnati — via Erie and C. H. & D. R. Rs.

22	333	35	97	10	30	8	53	31.71	37.50
20	333	48	257	15	55	11	38	20.92	28.63

¹The data in the *Official Guide* of May for these two trains were incomplete, and were supplemented from the *Guide* of June.

AMERICAN TRAINS.—*Continued.*

From Cleveland to Cincinnati — via Pennsylvania R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
502 ...	290	28	69	9	20	8	11	31.07	35.43
528	290	18	130	11	0	8	50	26.36	32.82

GROUP 15.

From Cleveland to St. Louis — via Big Four R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
19	548	21	49	14	20	13	31	38.23	40.53
43	548	15	38	14	30	13	52	37.79	39.51
11	548	22	48	15	10	14	22	36.13	37.96
35	548	33	75	16	45	15	30	32.71	35.35

From Cleveland to St. Louis — via Pennsylvania R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
528	600	28	77	17	50	16	33	33.64	36.25

GROUP 16.

From Pittsburg to Chicago — via Pennsylvania R. R. (Ft. Wayne).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
5	468	7	18	12	40	12	22	36.89	37.83
15	468	20	28	13	5	12	37	35.78	37.08
9	468	29	37	13	45	13	8	34.04	35.64
21	468	13	24	13	35	13	11	34.46	35.51

From Pittsburg to Chicago — via Baltimore & Ohio R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
5	488.7	17	25	14	35	14	10	33.52	34.50
47	488.7	39	86	16	20	14	54	29.92	32.80

From Pittsburg to Chicago — via Pennsylvania (Pan Handle).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
21	507	35	67	15	50	14	43	32.03	34.44
3	507	57	188	19	10	16	02	26.45	31.63

GROUP 17.

From Pittsburg to St. Louis — via Pennsylvania R. R. (Pan Handle).

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
5	635	17	59	17	5	16	6	37.18	39.44
7	623	17	47	16	50	16	3	37.02	38.82
21	635	27	72	17	50	16	38	35.61	38.18

AMERICAN TRAINS.—*Continued.*

From Pittsburg to St. Louis — via P. C. C. & St. L., B. & O., and B. & O. S. W. R. Rs.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min	Hours	Min.	Journey-Speed	Running-Speed
223	697	39	75	21	6	19	51	33.03	35.11
209 ...	697	31	284	24	43	19	59	28.20	34.88

From Pittsburg to St. Louis — via B. & O., and B. & O. S. W. R. Rs.

105	667	36	149	21	35	19	6	30.91	34.92
103	667	37	250	23	58	19	48	27.83	33.69

GROUP 18.

From Pittsburg to Cincinnati — via P. C. C. & St. L., B. & O., and B. &. O. S. W. R. Rs.

209	355	16	65	10	50	9	45	32.84	36.41
223	355	29	46	12	5	11	19	29.39	31.36

From Pittsburg to Cincinnati — via Pennsylvania R. R. (Pan Handle).

21	313	8	42	9	20	8	38	33.55	36.26
19	313	15	43	9	30	8	47	32.95	35.65
5	313	10	88	10	15	8	47	30.54	35.65

From Pittsburg to Cincinnati — via B. & O. and B. & O. S. W. R. Rs.

103	325	22	41	10	15	9	34	31.71	33.96
105	325	27	51	11	40	10	49	27.84	30.00

GROUP 19.

From Baltimore to Buffalo — via Pennsylvania R. R.

15	396	12	42	10	48	10	6	36.67	39.21
7	396	12	38	11	5	10	27	35.74	37.89

GROUP 20.

From Baltimore to Pittsburg — via Baltimore & Ohio R. R.

11	342	5	22	9	15	8	43	36.97	39.23
5	312	13	44	10	8	9	24	33.75	36.38
9	342	16	39	12	30	11	51	27.36	28.86

AMERICAN TRAINS.—*Continued.*

From Baltimore to Pittsburg — via Pennsylvania R. R.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
1	331.9	18	29	9	0	8	31	36.88	38.96
21	331.9	4	24	9	15	8	51	35.88	37.50
15	331.9	15	53	10	3	9	10	33.03	36.19
9	331.9	9	31	10	15	9	44	32.38	34.11

GROUP 21.

From Baltimore to Cincinnati — via B. & O. and B. & O. S. W. R. Rs.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
1	592	19	51	17	55	17	4	33.04	34.69
55	592	29	82	18	35	17	13	31.86	34.38
3	592	22	64	18	35	17	31	31.86	33.79

GROUP 22.

From Cincinnati to Chicago — via Monon Route.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
32	308	30	49	8	40	7	51	35.52	39.24
30	308	19	28	8	20	7	52	36.97	39.18
40	322	37	52	9	25	8	33	34.18	37.66
40	308	36	40	9	0	8	20	34.22	36.97
36	308	28	37	10	38	10	1	28.97	30.73

From Cincinnati to Chicago — via Big Four R. R.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
19	305.6	15	21	8	20	7	59	36.69	38.30
11	305.6	15	28	9	0	8	32	33.96	35.80
37	305.6	16	44	10	40	9	56	28.64	30.78

From Cincinnati to Chicago — via Pennsylvania R. R.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
19	299	12	20	8	20	8	0	35.89	37.38
11	299	21	41	8	50	8	9	33.86	36.69
1	299	12	65	10	55	9	50	27.38	30.42

GROUP 23.

From Cincinnati to St. Louis — via B. & O. S. W. R. R.

Train Number	Distance (Miles)	Station-Stops No.	Station-Stops Min.	Journey-Time Hours	Journey-Time Min.	Running-Time Hours	Running-Time Min.	Miles per Hour Journey-Speed	Miles per Hour Running-Speed
1	342	10	10	8	25	8	15	40.62	41.45
9	342	9	9	8	41	8	32	39.40	40.09
3	342	14	14	10	28	10	14	32.66	33.43
7	342	75	75	11	36	10	21	29.48	33.04

AMERICAN TRAINS.—*Continued.*

From Cincinnati to St. Louis — via Pennsylvania R. R.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
43	385	19	90	11	25	9	55	33.71	38.81
11	385	52	205	14	42	11	17	26.19	34.13

GROUP 24.

From Chicago to St. Louis — via Illinois Central R. R.

19	292.96	15	27	8	0	7	32	36.62	38.80
17	292.96	17	29	9	9	8	40	32.02	33.79

From Chicago to St. Louis — via Wabash R. R.

11	286	21	29	8	0	7	32	35.75	38.03
17	286	38	262	12	0	7	38	23.83	37.48
23	286	14	27	8	34	8	7	33.37	35.22
13	286	20	65	10	16	9	11	27.84	31.15

From Chicago to St. Louis — via Chicago & Alton R. R.

3	283.8	12	16	8	0	7	44	35.48	36.71
11	283.8	12	21	8	30	8	9	33.39	34.82
1	283.8	35	39	9	12	8	33	30.85	33.19
9	283.8	33	42	10	16	9	34	27.63	29.66

GERMAN TRAINS.

GROUP 1.

From Berlin to Hamburg — via Wittenberge.

8	177.69	1	4	3	27	3	23	51.50	52.51
6	177.69	2	6	3	32	3	26	50.28	51.75
14	177.69	1	4	3	36	3	32	49.35	50.28
12	177.69	3	9	3	50	3	41	46.33	48.24
4	177.69	4	11	4	4	3	53	43.69	45.75
10	177.69	21	29	4	53	4	24	36.38	40.38
2	177.69	22	31	5	4	4	33	35.07	39.05
206	177.69	21	31	5	29	4	58	32.40	35.77
202	177.13	30	51	6	36	5	45	26.83	30.80
204	177.13	32	53	6	39	5	46	26.63	30.71

GERMAN TRAINS.—*Continued.*

From Berlin to Hamburg — via Stendal and Uelzen.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
4	188.81	11	29	5	18	4	49	35.62	39.19
202	184.15	30	56	6	26	5	30	28.62	33.48
8	188.81	33	123	7	51	5	48	24.05	32.55
210	184.15	40	82	8	39	7	17	21.28	25.27
224	184.15	41	81	8	0	6	39	23.01	27.69

GROUP 2.

From Hamburg to Hanover — via Lüneburg and Lehrte.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
76	112.02	6	12	2	52	2	40	39.07	42.00
80	112.02	6	11	2	55	2	44	38.40	40.98
74	112.02	5	11	2	59	2	48	37.54	40.00
82	112.02	5	83	4	15	2	52	26.35	39.02
72	112.02	6	14	3	10	2	56	35.36	38.18
784	112.02	20	30	4	10	3	40	26.88	30.55
772	112.02	27	71	5	1	3	50	22.32	29.22
782	112.02	27	49	4	39	3	50	24.09	29.22
774	112.02	27	48	4	52	4	4	23.01	27.54
818	112.02	27	115	6	3	4	8	18.51	27.10

From Hamburg to Hanover — via Bremen.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
90	147.25	11	41	4	28	3	47	32.96	38.92
712	147.25	20	28	4	39	4	11	31.66	35.19
704	147.25	23	34	4	49	4	15	30.57	34.64
706	147.25	19	64	5	30	4	26	26.77	33.21
92	147.25	21	92	6	38	5	6	22.19	28.87

GROUP 3.

From Hamburg to Cologne — via Bremen, Münster, and Düsseldorf.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
94	281.88	12	28	7	14	6	46	38.96	41.65
92	281.88	16	62	8	18	7	16	33.96	38.79
96	278.34	14	37	8	2	7	25	34.64	37.52
90	279.70	47	125	10	39	8	34	26.26	32.64
704	278.34	56	221	12	58	9	17	21.46	29.98
706	278.34	59	220	13	32	9	52	20.56	28.20

GERMAN TRAINS.—*Continued.*

GROUP 4.

From Berlin to Hanover — via Magdeburg and Braunschweig.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Journey-Speed	Running-Speed
10	179.49	4	16	4	25	4	9	40.63	43.25
32	190.17	5	22	4	55	4	33	38.67	41.79
44	182.78	22	62	6	13	5	11	29.40	35.26
364	179.49	23	58	6	4	5	6	29.58	35.19
366	179.49	23	58	6	13	5	15	28.87	34.18
400	179.49	25	48	6	36	5	48	27.19	30.94
358	179.49	40	123	8	19	6	16	21.58	28.64
314	179.49	39	100	7	58	6	18	22.53	28.49

From Berlin to Hanover — via Stendal.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Miles per Hour Journey-Speed	Running-Speed
8	163.27	4	7	3	57	3	50	41.33	42.59
4	163.27	6	9	4	9	4	0	39.34	40.81
16	163.27	5	8	4	9	4	1	39.34	40.64
14	163.27	9	12	4	17	4	5	38.11	39.98
12	163.27	2	6	4	14	4	8	38.56	39.49
6	163.27	9	12	4	32	4	20	36.01	37.67
18	163.27	13	16	4	38	4	22	35.22	37.38
2	163.27	11	19	4	53	4	34	33.43	35.75
208	158.61	29	45	5	58	5	13	26.58	30.40
202	158.61	32	60	6	21	5	21	24.97	29.64
218	158.61	32	113	7	14	5	21	21.92	29.64
204	158.61	32	120	7	25	5	25	21.38	29.28
210	158.61	30	52	6	22	5	30	24.91	28.83
224	158.61	33	58	6	31	5	33	24.33	28.57
206	158.61	32	38	6	20	5	42	25.04	27.82

GROUP 5.

From Hanover to Cologne — via Minden, Hamm, and Dortmund.

Train Number	Distance (Miles)	Station-Stops No.	Min.	Journey-Time Hours	Min.	Running-Time Hours	Min.	Journey-Speed	Running-Speed
1	201.48	5	12	4	53	4	41	41.25	43.02
8	201.48	8	18	5	0	4	42	40.29	42.86
10	201.48	8	22	5	8	4	46	39.24	42.26
4	201.17	11	29	5	19	4	50	37.83	41.62
6	201.48	12	33	5	26	4	53	37.08	41.25
20	196.45	14	29	5	30	5	1	35.71	39.15
14	202.85	17	34	5	48	5	14	34.97	38.76
2	201.48	17	44	5	56	5	12	33.95	38.74
16	205.46	22	157	8	12	5	35	25.05	36.79
136	202.85	43	137	9	6	6	49	22.29	29.75
208	202.85	49	120	9	12	7	12	22.04	28.17
210	202.85	51	136	9	44	7	28	20.84	27.16
202	202.85	51	208	11	5	7	37	18.30	26.63

GERMAN TRAINS.—*Continued.*

From Hanover to Cologne — via Altenbeken, Unna, and Barmen.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
510	193.47	17	32	6	1	5	29	32.15	35.28
508	193.47	36	106	8	12	6	26	23.59	30.07
512	193.47	31	369	12	51	6	42	15.02	28.87
504	193.47	36	211	10	23	6	52	18.63	28.17
502	193.47	46	158	9	54	7	16	19.54	26.62
506	193.47	44	156	10	2	7	26	19.28	26.02

GROUP 6.

From Berlin to Cologne — via Halle and Cassel.

12	444.71	18	59	11	39	10	40	38.17	41.72
38	415.75	23	121	12	41	10	40	32.79	39.00
42	442.16	45	303	17	18	12	15	25.56	36.09
202	406.31	77	200	16	48	13	28	24.18	30.16

From Berlin to Cologne — via Magdeburg and Hildesheim.

32	357.72	14	35	9	31	8	56	37.58	40.06
38	357.91	61	529	21	17	12	28	16.82	28.70

From Berlin to Cologne — via Magdeburg and Kreiensen.

30	372.45	13	47	10	9	9	22	36.69	39.75
36	336.78	25	81	11	6	9	45	30.34	34.54
34	289.80	41	162	13	15	10	33	21.87	27.47

From Berlin to Cologne — via Magdeburg and Börssum.

38	376.67	61	494	21	17	13	3	17.70	28.86
400	376.67	72	249	17	33	13	24	21.46	28.10

GROUP 7.

From Hanover to Frankfort — via Göttingen, Cassel, and Marburg.

74	232.61	9	35	6	48	6	13	34.20	37.41
78	232.61	17	37	6	50	6	13	34.04	37.41
70 ...	227.33	14	212	9	37	6	5	23.63	37.36
76	227.33	13	45	6	57	6	12	32.71	36.66
72	227.33	21	82	8	7	6	45	28.00	33.67
882	332.61	33	196	10	28	7	12	22.22	32.30
774	227.33	70	192	12	27	9	15	18.30	24.58
772	227.33	65	186	12	2	8	56	18.89	24.32

GERMAN TRAINS.—*Continued.*

From Hanover to Frankfort — via Lehrte, Elze, Bebra, and Elm.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
82	236.52	20	77	7	57	6	40	29.75	35.47

From Hanover to Frankfort — via Göttingen, Bebra, and Elm.

788	220.49	23	196	9	42	6	26	22.73	34.27
778	220.49	40	143	9	54	7	31	22.27	29.33

GROUP 8.

From Berlin to Frankfort — via Halle and Elm.

42	374.56	11	28	8	44	8	16	39.79	42.03
6	334.69	13	33	8	34	8	1	39.06	41.74
2	334.69	18	50	9	23	8	33	35.66	39.14
202	334.69	43	175	12	5	9	10	27.69	36.51
4	334.69	30	102	11	3	9	20	30.28	35.86
12	334.69	34	146	11	59	9	33	27.92	35.04
208	334.69	83	298	16	41	11	43	20.16	28.56
204	334.69	91	245	16	25	12	20	20.38	27.13

From Berlin to Frankfort — via Halle and Marburg.

36	359.67	15	111	10	55	9	4	32.94	39.66
12	359.67	15	149	11	55	9	26	30.18	38.12
42	374.33	68	220	15	2	11	22	24.90	32.93

From Berlin to Frankfort — via Magdeburg and Marburg.

44	370.85	17	62	10	40	9	38	34.76	38.49
36	366.50	20	87	11	15	9	48	32.57	37.39
38	384.08	28	188	13	45	10	37	27.93	36.17
400	384.08	46	106	13	35	11	49	28.27	32.50
314	368.12	53	370	18	0	11	50	20.45	31.10
30	366.50	58	299	16	47	11	48	21.83	31.05
316	360.97	93	364	21	17	15	13	16.96	23.72

From Berlin to Frankfort — via Belzig, Nordhausen, and Marburg.

46	354.20	23	84	11	9	9	45	31.76	36.32
634	354.20	96	367	19	34	13	27	18.10	26.33
618	354.20	103	237	19	50	15	53	17.85	22.30

GERMAN TRAINS.—*Continued.*

From Berlin to Frankfort — via Magdeburg, Börssum, and Elm.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
34	356.81	29	104	11	27	9	43	31.16	36.72

GROUP 9.

From Frankfort to Cologne — via Mayence and Bonn.

53	137.99	3	7	3	28	3	21	39.80	41.19
98	137.99	5	55	4	21	3	26	31.72	40.19
267a ...	137.99	13	165	6	28	3	43	21.73	37.12
103	137.99	11	52	4	41	3	49	29.46	36.15
111	137.99	9	43	4	34	3	51	30.21	35.83
253	137.99	22	43	4	48	4	5	28.74	33.79
113	137.99	13	32	4	38	4	6	29.77	33.65
142	137.99	33	178	7	58	5	0	17.31	27.60
271	137.99	20	61	6	14	5	13	22.13	26.44
267	137.99	34	50	6	4	5	14	22.74	26.36
261	137.99	49	123	7	46	5	43	17.76	24.13
257	137.99	49	93	7	24	5	51	18.64	23.58

From Frankfort to Cologne — via Rüdesheim and Coblenz.

67	137.36	6	15	3	57	3	42	34.77	37.12

From Frankfort to Cologne — via Rüdesheim and Neuwied.

51	136.68	10	17	4	2	3	45	33.88	36.44
49	136.68	11	18	4	9	3	51	32.93	35.50
187	136.68	13	25	4	20	3	55	31.54	34.89
55	136.68	13	23	4	22	3	59	31.30	34.31
301	136.68	50	123	7	40	5	37	17.82	24.33
309	136.68	50	80	7	6	5	46	19.25	23.70
311	136.68	50	109	7	42	5	53	17.75	23.22
315	136.68	51	128	8	6	5	58	16.87	22.90
313	136.68	50	83	7	23	6	0	18.51	22.78

From Frankfort to Cologne — via Giessen and Betzdorf.

71	144.51	13	28	4	35	4	7	31.52	35.10
771	144.51	37	220	8	52	5	12	16.29	27.79
77	144.51	34	52	6	18	5	26	22.93	26.59
773	144.51	46	102	7	25	5	43	19.48	25.27
793	144.51	50	78	7	11	5	53	20.11	24.55

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GERMAN TRAINS.—*Continued.*

Group 10.

From Berlin to Nuremberg — via Halle, Jena, and Probstzella.

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TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
50	292.23	7	14	7	11	6	57	40.70	42.05
40	292.23	7	17	7	37	7	20	38.35	39.87
36	312.73	22	96	10	15	8	39	30.51	36.16

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From Berlin to Nuremberg — via Halle, Erfurt, and Coburg.

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32	330.44	21	78	10	5	8	47	30.60	37.64

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Group 11.

From Berlin to Leipsic — via Bitterfeld.

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28	107.30	0	0	2	15	2	15	47.69	47.69
22	107.30	2	7	2	27	2	20	43.80	46.05
26	107.30	2	5	2	33	2	28	42.08	43.44
12	107.30	8	84	4	18	2	54	24.95	37.00
24	107.30	6	24	3	20	2	56	32.22	36.62
208	107.30	20	57	3	55	2	58	27.37	36.13
4	107.30	10	24	3	28	3	4	30.92	34.95
232	107.30	27	44	4	14	3	30	25.37	30.65
430	107.30	27	49	4	32	3	43	23.69	28.84
206	107.30	28	44	4	30	3	46	23.84	28.46
204	107.30	28	48	4	41	3	53	22.93	27.65
202	107.30	20	70	5	14	4	4	20.52	26.36

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Group 12.

From Leipsic to Nuremberg — via Weida and Bamberg.

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74	200.67	10	23	5	46	5	23	34.79	37.27
76	200.67	20	85	7	32	6	7	26.63	32.80
370	206.67	54	487	15	42	7	35	13.16	27.25
362	200.67	55	318	13	12	7	54	15.20	25.40

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From Leipsic to Nuremberg — via Jena and Bamberg.

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14	196.76	7	20	5	47	5	27	34.02	36.10
262	196.76	20	203	9	11	5	48	21.42	33.92
254	196.76	40	173	11	7	8	14	17.69	23.89

GERMAN TRAINS.—*Continued.*

From Leipsic to Nuremberg — via Altenburg and Hof.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
22	205.33	11	22	6	6	5	44	33.65	35.81
26	220.18	14	33	6	46	6	13	34.49	35.41
24	220.18	18	55	7	23	6	28	29.82	34.04
30	220.18	18	58	7	33	6	35	29.16	33.44
34	220.18	28	77	8	30	7	13	25.90	30.50
214	220.18	27	319	12	39	7	20	17.40	30.02
202	220.18	36	202	11	13	7	51	19.62	28.04

GROUP 13.

From Nuremberg to Munich — via Ingolstadt.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
50	123.45	0	0	2	55	2	55	42.28	42.28
102	123.45	3	6	3	9	3	3	39.19	40.48
40	123.45	0	0	3	5	3	5	40.08	40.08
104	123.45	9	19	3	43	3	24	33.19	36.31
112	123.45	7	14	3	49	3	35	32.32	34.48
220	123.45	10	27	4	13	3	46	29.25	32.75
24	123.45	10	50	5	10	4	20	23.88	28.51
206	123.45	29	73	6	30	5	17	18.99	23.38
212	123.45	28	55	7	1	6	6	17.59	20.24
208	123.45	29	142	8	44	6	22	14.14	19.38
204	123.45	29	90	6	50	5	20	˙18.08	23.16

GROUP 14.

From Berlin to Dresden — via Jüterbog and Röderau.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
54	119.54	6	9	2	58	2	49	40.25	42.39
52	119.54	4	8	2	59	2	51	40.11	41.94
284	119.54	27	43	4	19	3	36	27.67	33.21
286	119.54	30	48	4	59	4	11	24.00	28.59
282	119.54	29	76	5	31	4	15	21.66	28.13

From Berlin to Dresden — via Zossen and Elsterwerda.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
64	111.71	3	10	2	52	2	42	38.92	41.37
66	111.71	3	6	2	54	2	48	38.52	39.90
62	111.71	5	10	3	6	2	56	36.04	38.12
312	111.71	25	42	4	27	3	45	25.10	29.79
316	111.71	24	49	4	45	3	56	23.52	28.43
314	111.71	24	57	5	5	4	8	21.99	27.05

GROUP 15.

From Dresden to Breslau — via Kohlfurt.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
125	167.81	10	24	4	39	4	15	36.08	39.48
123	167.81	11	32	4	58	4	26	33.78	37.85
121	167.81	11	37	5	5	4	28	33.01	37.56
641	167.81	21	163	7	49	5	6	21.46	32.90
653	166.57	37	190	9	8	5	58	18.23	27.91
645	166.57	40	74	7	13	5	59	23.07	27.83

GERMAN TRAINS.—*Continued*.

From Dresden to Breslau — via Hirschberg.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
121	192.04	20	168	8	36	5	48	22.33	33.11
125	192.04	19	66	6	55	5	49	27.76	33.01
123	192.04	20	153	8	40	6	7	22.15	31.39
647	192.04	38	88	8	36	7	8	22.33	26.92

GROUP 16.

From Berlin to Breslau — via Sagan.

9	210.12	8	20	5	21	5	1	39.27	41.88
5	210.12	8	22	5	28	5	6	38.43	41.20
3	210.12	11	30	5	54	5	24	35.61	38.91
225	210.12	47	92	8	53	7	21	23.65	28.58
223	208 88	48	96	9	25	7	49	22.18	26.71

From Berlin to Breslau — via Cottbus.

113	231.18	15	38	6	24	5	46	36.12	40.08
761	217.95	15	47	6	21	5	34	34.32	39.15
771	202.73	22	55	6	19	5	24	32.09	37.54
767	214.78	29	49	6	36	5	47	32.54	37.13
111	255.41 ·	25	63	8	29	7	26	30.10	34.36
773	214.78	32	252	10	36	6	24	20.26	33.55
769	214.78	30	161	9	10	6	29	23.43	33.12

From Berlin to Breslau — via Kohlfurt.

1	229.19	14	41	6	36	5	55	34.72	38.73
221	229.19	36	87	8	30	7	3	26.96	32.50
229	227.95	46	110	10	12	8	22	22.34	27.23

From Berlin to Breslau — via Reppen.

53	206.2	10	23	5	43	5	20	36.06	38.66
5	206.2	31	48	7	15	6	27	28.44	31.96
55	206.2	31	52	7	31	6	39	27.43	31.00
1	206.2	33	384	13	39	7	15	15.10	28.44
223	206.2	38	179	10	59	8	0	18.77	25.77

GROUP 17.

From Dresden to Leipsic — via Würzen.

51	74.36	2	3	1	52	1	49	39.83	40.93
6	74.36	2	6	1	55	1	49	38.79	40.93
2	74.36	4	7	2	0	1	53	37.18	39.48
8	74.36	2	5	2	0	1	55	37.18	38.79
12	74.36	5	8	2	9	2	1	34.58	36.87
474	74.36	6	7	2	10	2	3	34.32	36.27

GERMAN TRAINS.—*Continued.*
From Dresden to Leipsic — via Würzen.—*Continued.*

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
476	74.36	16	23	2	59	2	36	24.92	28.60
470	74.36	15	22	2	59	2	37	24.92	28.41
454	74.36	16	22	2	57	2	35	25.20	28.78
456	74.36	17	25	3	0	2	35	24.78	28.78
462	74.36	17	26	3	4	2	38	24.24	28.23
466	74.36	16	28	3	6	2	38	23.98	28.23

From Dresden to Leipsic — via Chemnitz and Geithain.

104 ...	99.96	9	13	3	25	3	12	29.25	31.23
1004 ...	99.96	17	112	5	35	3	43	17.90	26.89
106 ...	99.96	21	42	4	29	3	47	22.29	26.41
1012 ...	99.96	30	68	5	30	4	22	18.17	22.89
1008 ...	99.96	31	74	5	40	4	26	17.60	22.54

GROUP 18.
From Dresden to Nuremberg — via Chemnitz, Hof, and Bamberg.

106	258.09	20	56	8	53	7	57	29.06	32.46
104	258.09	21	71	9	13	8	2	27.99	32.14
126	258.09	30	77	10	0	8	43	25.81	29.60
108	258.09	15	35	9	19	8	44	27.69	29.56

GROUP 19.
From Dresden to Munich — via Hof and Regensburg.

126 ...	337.43	14	40	10	35	9	55	31.89	34.01
108 ...	337.43	13	60	10	55	9	55	30.90	34.01
106 ...	337.43	18	71	11	17	10	6	29.91	33.41
1022 ...	337.43	26	127	12	22	10	15	27.28	32.92
1006 ...	337.43	30	76	11	57	10	41	28.24	31.59
1012 ...	337.43	72	388	21	21	14	53	15.80	22.68
1002 ...	337.43	96	513	23	39	15	6	14.27	22.35
1016 ...	337.43	88	531	24	17	15	26	13.90	21.87

GROUP 20.
From Munich to Frankfort — via Ingolstadt, Würzburg, and Hanau.

93	256.41	7	25	6	26	6	1	39.85	42.61
87	256.41	10	38	7	5	6	27	36.19	39.75
91	256.41	19	55	8	1	7	6	31.98	36.11
89	256.41	14	71	8	36	7	25	29.81	34.57
25	253.30	60	308	13	36	8	28	18.63	29.91
207	256.41	71	385	17	9	10	44	14.95	23.88

From Munich to Frankfort — via Ulm, Stuttgart, and Heidelberg.

18	293.56	12	65	8	40	7	35	33.87	38.71
20	273.80	19	56	8	23	7	27	32.66	36.75
6	273.80	21	102	9	26	7	44	29.02	35.40
2	273.80	19	74	9	18	8	4	29.44	33.94

GERMAN TRAINS.—*Continued.*

GROUP 21.

From Nuremberg to Frankfort — via Würzburg and Aschaffenburg.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
67	147.81	8	31	4	30	3	59	32.85	37.14
53	147.81	5	15	4	19	4	4	34.21	36.32
55	147.81	13	50	5	0	4	10	29.56	35.42
61	147.81	7	29	4	45	4	16	31.12	34.61
51	147.81	12	33	4	59	4	26	29.68	33.36
443	147.81	27	90	6	51	5	21	21.58	27.63
449	147.81	47	178	9	42	6	44	15.24	21.96

GROUP 22.

From Leipsic to Frankfort — via Halle, Cassel, and Marburg.

554	279.83	10	69	8	16	7	7	33.85	39.31
84	279.83	15	72	8	40	7	28	32.28	37.47
468	279.83	18	149	10	10	7	41	27.52	36.42
432	279.83	89	277	14	58	10	21	18.69	27.03
132	279.83	81	314	15	44	10	30	17.78	26.65
152	279.83	88	331	16	3	10	32	17.43	26.56
160	279.83	53	172	13	49	10	57	20.25	25.55

From Leipsic to Frankfort — via Weimar, Bebra, and Elm.

96	239.26	13	39	6	52	6	13	34.84	38.48
188	239.26	21	47	7	23	6	36	32.40	36.25
14	239.26	21	63	7	42	6	39	31.07	35.97
92	239.26	17	51	7	36	6	45	31.48	35.00
256	239.26	37	156	10	4	7	28	23.76	32.04
258	239.26	69	516	18	20	9	44	13.05	27.82
252	239.26	69	274	13	51	9	17	17.27	25.77
266	239.26	69	173	12	59	10	6	18.42	23.68

From Leipsic to Frankfort — via Weimar, Bebra, and Marburg.

262	295.92	35	171	11	10	8	19	26.50	35.58
254	278.90	71	130	11	37	9	27	24.00	29.51
400	278.90	69	224	13	17	9	33	20.99	29.20

GROUP 23.

From Leipsic to Hanover — via Halle, Magdeburg, and Braunschweig.

160	165.34	10	56	5	4	4	8	32.61	40.03
84	165.34	11	41	4	53	4	12	33.60	39.36
440	165.34	18	75	5	57	4	42	27.79	35.18
152	165.34	17	188	8	11	5	3	20.21	32.74
158	165.34	27	117	7	7	5	10	23.22	31.98
468	165.34	40	134	7	48	5	34	21.20	29.68
434	165.34	43	182	9	14	6	12	17.91	26.67

GERMAN TRAINS.—*Continued.*

From Leipsic to Hanover — via Halle, Goslar, and Hildesheim.

TRAIN NUMBER	DISTANCE (Miles)	STATION-STOPS		JOURNEY-TIME		RUNNING-TIME		MILES PER HOUR	
		No.	Min.	Hours	Min.	Hours	Min.	Journey-Speed	Running-Speed
132	162.80	8	29	4	42	4	13	34.64	38.58
554	162.78	33	335	9	54	4	19	16.44	37.68

From Leipsic to Hanover — via Vienenberg and Braunschweig.

136	160.06	10	23	4	35	4	12	34.95	38.11
154	160.06	10	114	6	21	4	27	25.21	35.97

From Leipsic to Hanover — via Bitterfeld and Magdeburg, Braunschweig.

146	170.50	12	39	5	12	4	33	32.79	37.47

From Leipsic to Hanover — via Halle, Nordhausen and Northeim.

444	178.7	26	110	6	48	4	58	26.28	35.96
468	178.7	24	115	7	10	5	15	24.92	34.04
84	178.7	23	85	6	41	5	16	26.75	33.91
436	178.7	34	172	8	42	5	50	20.54	30.65

From Leipsic to Hanover — via Halle, Magdeberg, and Oebisfelde.

154	168.64	22	142	7	8	4	46	23.64	35.35

GROUP 24.
From Leipsic to Hamburg — via Halle, Madgeburg, and Wittenberge.

160	242.74	8	27	6	4	5	37	40.01	43.21
158	242.74	21	43	6	50	6	7	35.52	39.68
152	242.74	22	52	7	19	6	27	33.17	37.63
468	242.74	28	113	8	32	6	39	28.44	36.50

From Leipsic to Hamburg — via Halle, Magdeburg, and Uelzen.

84	229.38	14	51	6	26	5	35	35.65	41.08

GROUP 25.
From Hanover to Nuremberg — via Göttingen, Elm. and Hanau.

74	339.88	20	205	12	59	9	34	26.19	35.52

From Hanover to Nuremberg — via Göttingen, Elm, and Würzburg.

76	285.27	19	74	9	21	8	7	30.51	35.13
78	304.03	42	137	12	14	9	57	24.86	30.56
72	285.27	50	129	11	46	9	37	24.24	29.65

AMERICAN TRAINS AVERAGED BY GROUPS.

Group Number	All Trains from	Number of Trains Averaged	Average Distance Traveled	Average Journey-Speed of All Trains	Average Running-Speed of All Trains
3......	New York (J. C.) to Philadelphia	55	90.30	41.38	43.52
4......	Philadelphia to Baltimore	34	95.75	39.86	41.90
6......	Philadelphia to Buffalo.........	9	422.30	36.22	39.87
5......	New York to Buffalo...........	30	432.68	37.30	39.46
1......	New York to Boston...........	21	232.53	35.26	39.06
11......	Buffalo to St. Louis...........	3	741.00	36.41	38.78
19......	Baltimore to Buffalo..........	2	396.00	36.20	38.54
2......	Boston to Buffalo.............	8	491.80	36.04	38.01
15......	Cleveland to St. Louis	5	558.00	35.53	37.83
9......	Buffalo to Cleveland...........	16	197.75	33.22	37.51
7	Philadelphia to Pittsburg.......	10	353.70	34.10	37.12
10......	Buffalo to Chicago	13	546.70	33.78	36.84
23......	Cincinnati to St. Louis.........	6	356.33	32.75	36.45
17......	Pittsburg to St. Louis.........	.7	660.00	32.29	36.24
13......	Cleveland to Chicago	14	359.59	33.31	35.62
20......	Baltimore to Pittsburg	7	336.22	33.42	35.54
22......	Cincinnati to Chicago..........	11	306.11	32.98	35.43
14......	Cleveland to Cincinnati........	8	287.30	30.11	35.26
16......	Pittsburg to Chicago...........	8	482.90	32.47	34.77
24......	Chicago to St. Louis...........	10	286.51	31.16	34.66
12......	Pittsburg to Cleveland	12	146.00	28.50	34.31
21......	Baltimore to Cincinnati	3	392.00	32.24	34.27
18......	Pittsburg to Cincinnati.........	7	328.00	31.10	33.98
8......	Buffalo to Pittsburg............	7	252.00	29.34	32.55

GERMAN TRAINS AVERAGED BY GROUPS.

Group Number	All Trains from	Number of Trains Averaged	Average Distance Traveled	Average Journey-Speed of All Trains	Average Running-Speed of All Trains
24......	Leipsic to Hamburg	5	240.07	34.12	39.46
10......	Berlin to Nuremberg...........	4	306.91	34.94	38.61
1......	Berlin to Hamburg	15	180.39	32.44	36.86
23......	Leipsic to Hanover............	17	168.06	24.75	34.49
20......	Munich to Frankfort..........	10	265.03	27.42	34.41
3......	Hamburg to Cologne	6	279.75	27.64	34.14
11......	Berlin to Leipsic	12	107.30	28.33	34.02
4......	Berlin to Hanover.............	23	168.10	29.35	33.91
7......	Hanover to Frankfort..........	11	237.45	25.91	33.72
16......	Berlin to Breslau.............	20	215.92	27.10	33.59
2......	Hamburg to Hanover..........	15	123.76	27.71	33.58
6......	Berlin to Cologne	11	379.72	25.69	33.54
14......	Berlin to Dresden	11	115.27	27.61	33.41
5......	Hanover to Cologne	19	199.24	25.63	33.15
8......	Berlin to Frankfort	22	355.98	26.10	33.14
25......	Hanover to Nuremberg.........	4	303.61	26.21	32.60
15......	Dresden to Breslau...........	10	177.25	24.74	32.19
21......	Nuremberg to Frankfort........	7	147.81	25.80	31.35
12......	Leipsic to Nuremberg...... ...	14	208.95	22.77	31.16
18......	Dresden to Nuremberg.........	4 ·	258.09	27.59	30.88
22......	Leipsic to Frankfort...........	18	268.59	22.67	30.55
17......	Dresden to Leipsic	17	81.89	25.39	29.84
9......	Frankfort to Cologne	27	138.74	23.12	29.23
13......	Nuremberg to Munich	11	123.45	24.62	28.76
19......	Dresden to Munich...........	8	337.43	21.36	28.04

The superiority of the passenger train service of America railways is demonstrated conclusively by the foregoing tables, and it is to be remembered that the very fastest trains in the United States, namely those between Camden and Atlantic City, are not included with the American trains, while the tables show the very fastest trains running in Germany. The overwhelming superiority at every point of the American train service is shown in narrow compass by the condensed table which follows.

SUMMARY OF GERMAN AND AMERICAN TRAINS.

	German Trains	American Trains
1. Whole number of trains averaged........................	321	306
2. Number of lines showing trains having an average running-speed above 40 miles per hour	22	26
3. Number of trains having an average journey-speed above 40 miles per hour	18	90
4. Total number of trains having an average running-speed above 40 miles per hour.................................	45	122
5. Number of trains having an average running-speed above 50 miles per hour....................................	3	12
6. Number of trains having an average running-speed from 45 to 50 miles per hour	4	36
7. Number of trains having an average running-speed from 40 to 45 miles per hour	38	74
8. Number of groups showing, when all trains of the group were averaged, a journey-speed above 30 miles per hour	3	22
9. Number of groups showing, when all trains of the group were averaged, a running-speed above 35 miles per hour	3	18

IV.

How, it is likely to be asked, was it possible for Mr. Schulze, in view of the marked pre-eminence of American trains just shown, to prepare even a plausible argument to support his contention of the superiority of the German service? The answer is not far to seek. It is found in the fact that every trade has its tricks, that of the statistician not excepted.

Mr. Schulze treated the two countries on widely differing bases. It was largely by confining his observations, on the one hand, to but a limited portion of the United States, and not covering that either fairly or thoroughly, and, on the other hand, by scouring the whole of Germany for odds and ends of trains,

which by hook or by crook could be made to show a speed of
65 kilometers per hour, the arbitrary standard of excellence sel-
ected by him, and by splitting up the journeys of the fast trains of
Germany into many segments, and calling each a train, that Mr.
Schulze succeeded in making it appear that there were more fast
trains in Germany than in the United States.

It is not deemed necessary, because of Mr. Schulze's rejoinder,
to restate or to enlarge my extended criticism of his tables of
German and American trains.[15]   Patience need not be expended
in a detailed review of the more favorable treatment Mr. Schulze
gave the trains of Germany.   A summary of the different ways
in which he favored the trains of Germany, with illustrations of
each, and a brief reply to a charge of unfairness, will suffice.

It was asserted in my criticism[16] of Mr. Schulze's comparison
of the speed of German and American trains that he was an
inaccurate and far from impartial investigator and judge.   These
charges will bear repetition, and may briefly be enumerated and
illustrated.

His principal inaccuracies fall under two heads: (1) the
American trains he gives are not always the fastest trains run-
ning between the cities under consideration; and (2) where the
trains introduced are the fastest, yet the speed given is not so

[15] With but a single exception, and this of very limited scope, no criticism
of any importance of Mr. Schulze's tables need be altered or withdrawn.   Mr.
Schulze's designations of American trains were very indefinite and caused a
misunderstanding.   The names of the railroads were never given, and the cities
selected to indicate the route followed were seldom well chosen.   It was stated
by me that in giving the fastest trains between New York and Boston he omitted
the trains via Springfield.   Mr. Schulze explains that a train by this route was
included under the line entitled " New York-Hartford-Boston."   Had he em-
ployed the current designation of this route, which always appears in the heading
of the tables showing the service by this route, viz., " via Springfield," the mis-
understanding would have been avoided.   The trains to Boston via Hartford and
Willimantic are usually spoken of as running via Hartford, and it was supposed
that Mr. Schulze had included one of these.   As it now appears, no train via
Hartford and Willimantic was given, and the criticism should have run against
Mr. Schulze for not including a train by this route, instead of for not giving a
train by the Springfield route.

[16] " American and German High-Speed Trains," JOURNAL OF POLITICAL ECON-
OMY, Vol. X, pp. 361 ff.

high as it should be. The most notable errors of the first kind are found in the case of the trains running between New York and Pittsburg, Chicago and Cleveland, Philadelphia and Buffalo, Buffalo and Pittsburg, and Cincinnati and Cleveland.[17]

Mr. Schulze objects to a few of the combinations made by me on the ground that for a part of a journey I used a train already used by him. For example, in giving the trains from Philadelphia to Buffalo, for a part of the way I used the "Black Diamond Express," which had already been given by him in his list of trains from New York to Buffalo. This criticism is of no validity. Mr. Schulze has done the same in preparing his table of German trains, as will be seen by a reference to trains Nos. 39 and 40. This is an instance of his refusal to apply the same tests to American as to German trains.

His errors of the second kind, often of considerable importance, were due to his failure to note that over parts of the journey, usually the beginning or the end, the passengers were carried by ferryboat. Passengers leaving New York city by all of the railroads, except the New York, New Haven & Hartford and the New York Central railroads, are carried to the west bank of the Hudson River by ferries, and there take the cars.

Of the forty-two trains found in the table, eighteen are scheduled from New York city, and of these five leave over the New York Central & Hudson River and the New York, New Haven & Hartford railways, and therefore really start from New York city. The remaining thirteen trains do not start from New York city, but from the New Jersey shore, the passengers crossing the Hudson River on ferryboats. Now, the schedule time of departure from New York city is the hour the ferryboat leaves, and it is hardly fair to charge this time to the train which is waiting on the other side of the river. It seems the more unfair to do this because the distance across the river is generally not added to the mileage actually run by the train. This fact should have been a sufficient hint to Mr. Schulze that he would err if he took the New York city time as the time the train departed.

To all trains this addition of from thirteen to fifteen minutes

[17] For a full statement of these trains see *ibid.,* pp. 374, 375, 381, 382.

to their running-time is a matter of some importance, and for the short-distance trains it counts heavily.   For example, train No. 85 for Philadelphia, on the Pennsylvania Railroad, is scheduled to leave Desbrosses Street, and Cortland Street also, at 4 P. M., but, as a matter of fact, the ferryboats leave at 4 o'clock, the train starting from Jersey City at 4:13 P. M.   Here, then, is an error of thirteen minutes in the time of the departure of this train, and, as the run is a short one, the speed of this train consequently is very materially understated.   Mr. Schulze, allowing three minutes for three stops, reports that it runs at an average speed of 75.4 kilometers per hour, while it really runs, allowing two minutes for two stops, at an average speed of 82.6 kilometers per hour.   Passengers for Atlantic City from Philadelphia, by the trains over the two routes Mr. Schulze cites, are ferried across the Delaware River to Camden, and there take the train.   Passengers on the Overland Limited are not carried into San Francisco by rail.   The train stops at Oakland, and from there the passengers are carried over the wide bay by ferry.

It will be remembered that Mr. Schulze explained that the task of ascertaining the speed of the fastest train on all the leading American railways was so great that he would not attempt it.   To bring his labors within what he deemed proper bounds, he confined his investigations to the railways between a few large cities.   Consequently the table, even if this limited field had been properly covered, would have had but slight value for comparative purposes.   Many of the most important lines received no consideration whatever.   Even the excellent service between Chicago and Milwaukee, on the Chicago & North-Western and on the Chicago, Milwaukee & St. Paul railways, received no consideration.

In his rejoinder Mr. Schulze attempts to belittle the service just referred to.   He seems to hold that, as it does not rank with the very best American service, and as the distance run is not great, his omission of this service should not call for unfavorable comment.[18]

First of all it may be remarked that the inclusion or exclusion

[18] *Archiv für Eisenbahnwesen*, 1902, p. 1256.

of the trains between Chicago and Milwaukee should not turn on the results of a comparison of these trains with other American trains, but rather on the manner in which they bear comparison with German trains. In a comparison where every train having a speed in excess of 65 kilometers per hour helps to turn the tide in favor of one country or the other, it should not be considered amiss to call attention to the omission of the service between two cities where one of the two lines has one train showing a speed of 79.1,[19] and another train with a speed of 78.2 kilometers, and the other line has a train showing a speed of 74.8 kilometers per hour.

Certainly it is not for Mr. Schulze to object, for several of the German trains of his table barely show a speed of 65 kilometers per hour, and at least one, train No. 22 from Kempten to Munich, succeeds in getting over the fence that separates Mr. Schulze's sheep from his goats only with the positive assistance of Mr. Schulze.

Let us see how the service between Chicago and Milwaukee, which Mr. Schulze deems unworthy of notice, compares with the service of Germany, in point both of speed and of distance. Of all the German trains that find a place in Mr. Schulze's summary tabulation of German and American trains [20] only one, that from Wittenberge to Hamburg, shows a speed greater than 79.1 kilometers per hour, the speed of the fastest train between Chicago and Milwaukee. The cities between which the fastest two German trains run and the length of their journeys are shown in the table which follows:

From	Kilometers	Running-Speed (Kilometers)
Wittenberge to Hamburg...	159	82.3
Chicago to Milwaukee	137	79.1
Stendal to Hanover	150	78.9

Mr. Schulze broadly intimates that if the Chicago-Milwaukee trains may not be neglected on the ground that their speed is not

[19] Mr. Schulze made a small error in giving the speed of this train. He overlooked a stop.

[20] *Archiv für Eisenbahnwesen,* 1901, p. 796.

great, they may be omitted on the ground that their run is only
a short one.   The run of the Chicago-Milwaukee train is very
nearly equal to that of the two German trains of the table just
submitted.   Further, it may be added that of the sixteen German
trains having a running-speed, according to Mr. Schulze's com-
putations, of above 70 kilometers per hour, seven run a shorter
distance than that run by the Chicago-Milwaukee trains, two
running even less than 100 kilometers, and two others running
just a little over 100 kilometers.   Of the thirty-six German
trains having a running-speed, according to Mr. Schulze's compu-
tations, above 65 kilometers per hour, fourteen run a less distance
than that run by the Chicago-Milwaukee trains, and one runs
but a kilometer farther.   Of Mr. Schulze's thirty-six German
trains, three run less than 100 kilometers and four just a little
over 100 kilometers.

In concluding my remarks on Mr. Schulze's omission of the
service over the two routes from Chicage to Milwaukee, it may
be stated that this service, taken as a whole, is superior to that
between any two cities of Germany, the service between Berlin
and Hamburg alone excepted.

It has been pointed out that by limiting his investigation
of American trains to a narrowly circumscribed territory Mr.
Schulze greatly impaired the value of his comparisons.   It has
been shown that there are many trains having a speed in excess
of 65 kilometers per hour wholly omitted by him.   In the prepa-
ration of his table of German trains he should have confined
himself to the best trains between the most important ten cities
of the Empire, just as he limited his investigations to the trains
between the most important ten cities of the United States.

Some of the fast American trains that should have been added
to the American table have been indicated.   The number of trains
will now be stated which should have been omitted from the
table of German trains to make it comparable with the American
table.   Of the thirty-six German trains which Mr. Schulze finds
to have a speed of 65 kilometers or more, at least sixteen do not
run between the most important ten cities of the empire.   They
should therefore, on Mr. Schulze's criterion, have been omitted.

It was shown in my criticism that by another device German train service was made to appear to much better advantage than it deserved. The journeys of several of the fastest German trains were broken up, and each segment counted as a train run. For example, the "Orient Express," which runs through Germany from Avricourt to Salzburg, a distance of 659 kilometers, appeared in the table three different times; the "North and South Express," which runs from Berlin to Kufstein, a distance of 753 kilometers, appeared in the table two different times; the "North Express," on its journey from Herbesthal to Hanover, a distance of 410 kilometers, was counted as two different trains, and as still another train on its journey from Dirschau to Edytkuhnen.

It was contended that it was misleading to count each one of these trains in the comparison, as two or even three trains, while the "Lake Shore Limited," running from Chicago to New York, a distance of 1,578 kilometers; the "Pennsylvania Limited," running between the same cities; the "Overland Limited," running from Chicago to San Francisco, a distance of 3,895 kilometers, each counted as but a single train.

In answer to these strictures Mr. Schulze made the lame reply that he could have further subdivided the journeys of German trains.[21] To this explanation it is sufficient to answer that we are here concerned, not with a question of the absolute divisibility of train journeys, but with a question of equality of treatment. I did not intend to imply that it would be quite impossible still further to subdivide the journeys of German trains.

The average distance traveled by the trains of this country is generally much greater than that of the trains of Germany, and Mr. Schulze, if he did not desire to make the disparity any greater than need be, should not have subdivided the journeys of such German trains as traveled fairly long distances. The average distance traveled by the thirty-six German trains which Mr. Schulze found to have a speed of 65 kilometers or more was 205.4 kilometers, while the average distance traveled by the

[21] *Archiv für Eisenbahnwesen,* 1902, p. 1256.

twenty-six American trains having a speed of 65 kilometers or more was 334.0 kilometers.

No. 23 of Mr. Schulze's table of American trains purported to be a train from Chicago to Cleveland by the way of Cincinnati. It was pointed out that no one travels to Cleveland by this route, and that an entirely different train makes the trip from Cincinnati to Cleveland than the one that starts from Chicago. It was also shown that Mr. Schulze's integration of these two trains meant a loss to the American table of two trains having a speed of over 65 kilometers per hour, because the trains making a good connection at Cincinnati would not show an average speed for the whole journey as high as 65 kilometers per hour.

To illustrate the absurdity of going from Chicago to Cleveland via Cincinnati it was compared with traveling from Brussels to Berlin by way of Zurich. Mr. Schulze's reply[22] is a reflection either on his candor or his intelligence. He says that the distance traveled unnecessarily *(Umweg)* in going from Chicago to Cleveland via Cincinnati is only 342 kilometers, while the distance traveled unnecessarily in going from Brussels to Berlin via Zurich is 770 kilometers.

Mr. Schulze's attention may be called to the fact that the direct distance in the latter instance is about twice as long as in the former, and that we are here concerned with a question of degree, not with absolute quantities.

Another way in which Mr. Schulze unfairly adds to the list of German trains having a speed in excess of 65 kilometers per hour is by cutting off such portion of the train's journey as would reduce the average speed below 65 kilometers per hour. This was done in several cases; *e. g.,* train No. 2 of his table really starts from Hamburg, but, assuming that it starts from Altona, its journey at low speed with several stops from Hamburg to Altona is cut out and the average running-speed to Kiel is thereby raised slightly above 65 kilometers per hour. Train No. 9, the Berlin-Budapest-Orient Express, begins its journey at Charlottenburg, but Mr. Schulze takes no note of it until it reaches the Schlesischer station, which is well to the eastern side of Berlin.

[22] *Ibid.,* p. 1255.

The slow journey through the city is thus counted out.   Train No. 17 is a good example of the splitting up of a train's journey to eliminate a bad stretch of track; 96 kilometers run at the low rate of 51.4 kilometers per hour in one direction and at 44 kilometers in the other were lopped off.

Another way in which the balance was tipped in favor of the German service was by boldly throwing out of consideration the very best American trains.   It may well be asked why the trains between Philadelphia and Atlantic City were altogether omitted from the comparison.   To be sure, the very fastest trains on both of the railways concerned did not run during the winter months at the time Mr. Schulze wrote; but it is insisted that this is not a sufficient reason for dropping the trains between these two cities entirely out of the comparison, for there were several trains over each of the railways whose average speed, both winter and summer, exceeded Mr. Schulze's figures of 65 kilometers per hour.   Mr. Schulze was aware of this, for at another point he states that a winter train on one of the railways had an average speed of 89.4 kilometers per hour, and one on the other railway an average speed of 82.6 kilometers.[23]   Even the lower of these speeds is higher than that attained by any German train in the comparison.

To throw out these American trains because they did not run through the winter, and to give a German train a place in his table which runs but once a week, another which runs but three times a week, and still another which runs but three and one-half months out of twelve, is certainly not even-handed.[24]   These trains are Nos. 8, 6, and 23 of the German trains, and are credited with a speed respectively of 70.5, 71.6, and 72.0 kilometers per hour, and therefore account for three of the sixteen German trains reported by Mr. Schulze as having a speed of 70 kilometers or more per hour.

Perhaps nothing better illustrates Mr. Schulze's skill in manipulating facts than the manner in which he draws on the

[23] *Archiv für Eisenbahnwesen,* 1901, p. 794.

[24] If it were desirable to enlarge this list, the trains running to Switzerland during the summer time only could be added.

favorable stretch of track from Berlin to Halle. Five of the
sixteen German trains having a speed in excess of 70 kilometers
per hour count in the comparison on the basis, or substantially on
the basis, of their speed over this short stretch of track. To
refuse the American trains between Chicago and Milwaukee any
place in his comparison and then include five German trains
over one short stretch of track shows to what straits Mr. Schulze
was put to secure a comparison favorable to the German service.
The numbers borne by these trains in Mr. Schulze's table and
their speed as stated by him are given in the subjoined table:

Number	From	Distance (Kilometers)	Average Speed (Kilometers)
30	Berlin to Bitterfeld	132	74.7
23	Berlin to Halle	162	72.0
17A.................	Berlin to Halle	162	76.5
29	Berlin to Halle	162	77.1
15	Berlin to Leipsic	173	76.9

The first train, that from Berlin to Bitterfeld, although it runs
on through Halle, makes its first stop at Bitterfield, and its
speed to that city is given by Mr. Schulze. The last train runs
down to Bitterfield, and then south to Leipsic, without making
a stop all the way from Berlin.

Mr. Schulze states that some of the evidence marshaled by
him in support of his contention that American trains do not run
anywhere near as fast as they were reported as running by the
daily and technical press, was neither quoted nor given considera-
tion by me. He complains that my failure to cite all the evidence
he presented would lead people to infer that his position was but
weakly supported.[25]

No one should have been misled by my résumé of his evi-
dence. It was distinctly stated, just before the first quotation
from Mr. Schulze was introduced, that a *few* examples of incor-
rect statements of extraordinary speed on American railways
would be presented. On submitting the first quotation from Mr.
Schulze it was explicitly stated that this was the first report of

[25] *Archiv für Eisenbahnwesen,* 1902, pp. 1246, 1247.

speed he questioned, and on presenting the next quotation it was clearly stated that this was the last record he challenged. Surely two do not make a few examples.

Now, as to the value of the omitted evidence. I did not deem it worthy of consideration. To have passed it in silence might have been taken as a kindness, for the so-called evidence is unworthy of serious discussion.

One of the three reports ignored by me concerned a run over the Chicago, Rock Island & Pacific Railroad from Chicago to Omaha. That the speed reported was incorrect appeared on the face of the return, for the division of the distance by the time consumed in making the run was grossly inaccurate. Another of the three ignored reports was for a run from Erie to Cleveland. In this case the distance was greatly overstated, and consequently the average speed reported was much too large.

Neither one of these pieces of so-called evidence was introduced by me because these two reports of high speed were obviously incorrect. It was supposed that Mr. Schulze aimed to discuss the question of the speed attained on American railways on its merits. It was entirely unnecessary to write an article of twenty pages to demonstrate the fact that errors occasionally occur in the daily and technical press, or for that matter in any other class of publications. Mr. Schulze feels especially aggrieved because of the third omission. He says in this instance there was absolutely no question but that a great error has been made.[26] What is it that so stirs Mr. Schulze's emotions? Nothing more than this: He finds that the announcement of the Royal Blue Line in the *Official Guide* of August, 1900, that its trains between Washington and New York are the "fastest, finest, and safest trains in the world," is untrue. This, to Mr. Schulze, a startling revelation, is to us of course not even an object of surprise. The announcement was an advertisement of the Royal Blue Line. In seeking patronage for their respective railways passenger agents often overstep the bounds of strict veracity, and no one is misled. General passenger agents, like statesmen on the stump,

[26] *Ibid.,* p. 1247.

are not held to strict accountability for their utterances; they have been accorded a form of poetic license.

In closing, while disclaiming belief in the extreme records he quoted, I wish again to assert, as in my former article, that Mr. Schulze has submitted no proof which seriously impairs the standing of either of the two reports of high speed on American railways that I formerly or now consider worthy of discussion. This position is taken for the simple reason that I do not regard the speed of regular trains as a satisfactory guide to the speed attained in emergencies, and no other evidence of any weight has been introduced. It is not enough to submit the average speed maintained by regular trains and to contrast this with the speed reported on an emergency run, and point to the fact that the latter is much higher and exclaim, "Impossible!" This procedure may be an elaborate case, but it is none the less a plain case, of begging the question.

So much for his evidence submitted in disproof of the reports of high speed said to have been made in America. On what sort of basis his second contention rested, viz., that, when considered in a large way, the passenger-train service of Germany was superior to that of the United States, has been shown at length. It was only by a varied resort to sharp practice that Mr. Schulze succeeded in compiling a table which showed that there were more fast trains in Germany than in the United States. An even-handed comparison immediately shows the superiority of the American service.

GEORGE G. TUNELL.

CHICAGO.